Computer Science

PEERING INTO THE [ARTIFICIAL] MIND'S EYE: A 3D VISUALIZATION OF AN ARTIFICIAL NEURAL NETWORK TRAINED ON MUSIC WAVEFORMS, Brian J. Krent, Cory R. Perry, Jeffrey Horn*, Northern Michigan University, Department of Mathematics and Computer Science, Marquette, MI 49855, jhorn@nmu.edu

What does an artificial mind "see"? Can we somehow peer into the activity and structure of an artificial mind in a useful and functionally perceivable manner? In this body of work, we attempt to witness the activity and structure of an artificial neural network--finding visual patterns through the process of its training--through use of 3D geometries, transparency, and gradient map texturing in OpenGL.

As a demonstration of this visualization, we train two types of artificial neural networks to play a simple song back to us. We record the neural networks' progress of learning the song and use this data to form visual representations in the hopes of being useful to human interpretation and understanding through abstraction into 3D geometries.